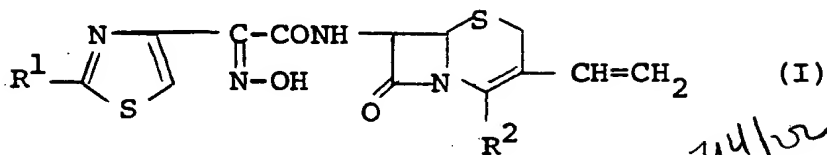


am  
What we claim is :

- c  
1. A syn isomer of <sup>the</sup> compound of the formula :



04007

10 in which  $R^1$  is amino or a protected amino group, and  
 $R^2$  is carboxy or a protected carboxy group,  
and a pharmaceutically acceptable salt thereof.

- 15 2. A compound of claim 1, wherein  
 $R^1$  is amino.

3. A compound of claim 2, which is  
7-[2-(2-aminothiazol-4-yl)-2-hydroxyiminoacetamido]-  
3-vinyl-3-cephem-4-carboxylic acid (syn isomer) or  
its sodium salt or its potassium salt.

4. A compound of claim 2, wherein  
 $R^2$  is esterified carboxy group.

25 5. A compound of claim 4, wherein  
 $R^2$  is lower alkoxycarbonyloxy(lower)alkoxycarbonyl.

30 6. A compound of claim 5, which is  
1-ethoxycarbonyloxyethyl 7-[2-(2-aminothiazol-4-yl)-  
2-hydroxyiminoacetamido]-3-vinyl-3-cephem-4-  
carboxylate (syn isomer) or its hydrochloride.

7. A compound of claim 4, wherein  
 $R^2$  is lower alkoxycarbonyl(lower)alkoxycarbonyl.

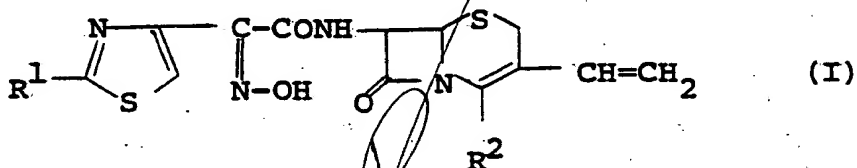
8. A compound of claim 7, which is  
8 tert-butoxycarbonylmethyl 7-[2-(2-aminothiazol-4-yl)-2-hydroxyiminoacetamido]-3-  
9 vinyl-3-cephem-4-carboxylate (syn isomer).
- 5 9. A compound of claim 4, wherein  
R<sup>2</sup> is carboxy(lower)alkoxycarbonyl.
- 10 10. A compound of claim 9, which is  
8 carboxymethyl 7-[2-(2-aminothiazol-4-yl)-  
9 2-hydroxyiminoacetamido]-3-vinyl-3-cephem-4-  
carboxylate (syn isomer).
- 15 11. A compound of claim 4, wherein  
R<sup>2</sup> is lower alkanoyloxy(lower)alkoxycarbonyl.
- 20 12. A compound of claim 11, which is  
8 1-propionyloxyethyl 7-[2-(2-aminothiazol-4-yl)-  
9 2-hydroxyiminoacetamido]-3-vinyl-3-cephem-4-  
carboxylate (syn isomer).
- 25 13. A compound of claim 11, which is  
8 pivaloyloxymethyl 7-[2-(2-aminothiazol-4-yl)-2-  
9 hydroxyiminoacetamido]-3-vinyl-3-cephem-4-  
carboxylate (syn isomer).
- 30 14. A compound of claim 4, wherein  
R<sup>2</sup> is higher alkanoyloxy(lower)alkoxycarbonyl.
- 35 15. A compound of claim 14, which is  
8 palmitoyloxymethyl 7-[2-(2-aminothiazol-4-yl)-2-  
9 hydroxyiminoacetamido]-3-vinyl-3-cephem-4-  
carboxylate (syn isomer).
16. A compound of claim 4, wherein

41

$R^2$  is (5-lower alkyl-2-oxo-1,3-dioxol-4-yl) (lower)-alkoxycarbonyl.

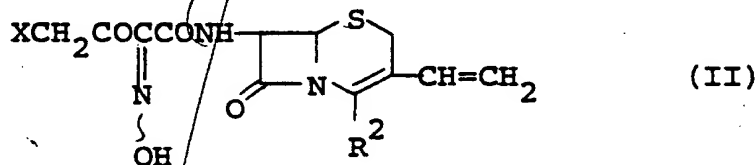
17. A compound of claim 16, which is  
(5-methyl-2-oxo-1,3-dioxol-4-yl)methyl 7-[2-(2-aminothiazol-4-yl)-2-hydroxyiminoacetamido]-3-vinyl-3-cephem-4-carboxylate (syn isomer).
18. A compound of claim 4, wherein  
 $R^2$  is phthalidyloxycarbonyl.
19. A compound of claim 18, which is  
phthalid-3-yl 7-[2-(2-aminothiazol-4-yl)-2-hydroxyiminoacetamido]-3-vinyl-3-cephem-4-carboxylate (syn isomer).

20. A process for production of a syn isomer of compound of the formula:



in which  $R^1$  is amino or a protected amino group,  
and  
 $R^2$  is carboxy or a protected carboxy group,  
and a salt thereof,  
which comprises

- (1) reacting a compound of the formula :

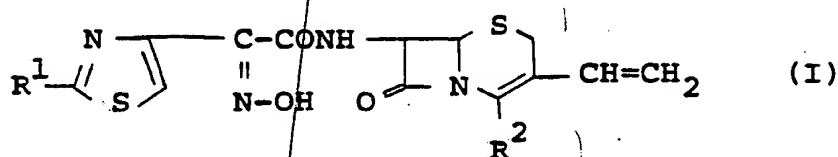


12

in which  $R^2$  is as defined above, and  
 $X$  is halogen,  
 or a salt thereof with a compound of the  
 formula :

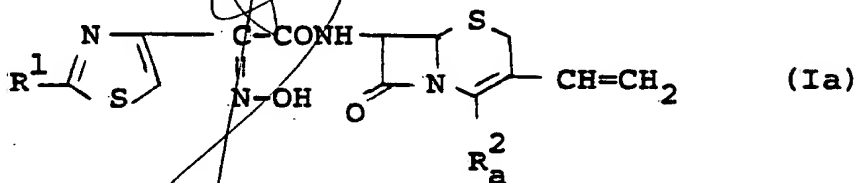


in which  $R^1$  is as defined above,  
 to give a compound of the formula :

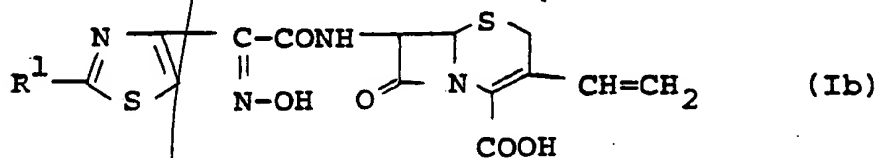


in which  $R^1$  and  $R^2$  are each as defined above,  
 or a salt thereof; or

(2) subjecting a compound of the formula :

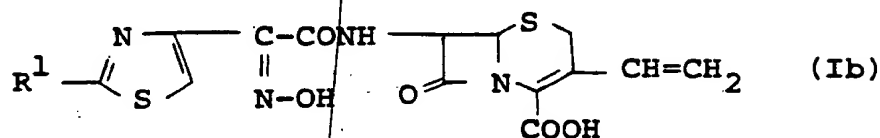


in which  $R^1$  is as defined above, and  
 $R_a^2$  is a protected carboxy group,  
 or a salt thereof to the removal reaction of the  
 carboxy-protective group to give a compound of the  
 formula :

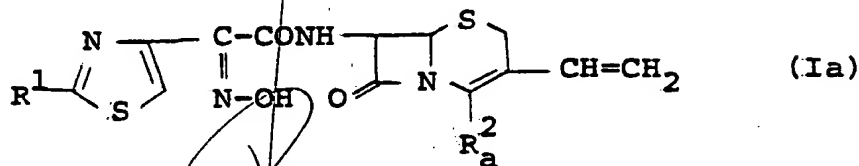


in which  $R^1$  is as defined above,  
or a salt thereof; or

- (3) introducing a carboxy-protective group  
into a compound of the formula :

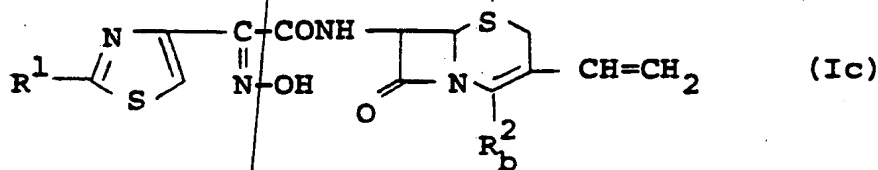


in which  $R^1$  is as defined above,  
or a reactive derivative at the carboxy group  
thereof, or a salt thereof  
to give a compound of the formula :

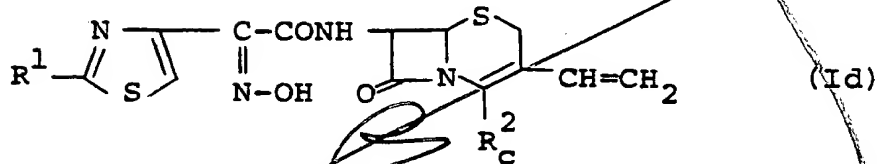


in which  $R^1$  and  $R_a^2$  are each as defined above,  
or a salt thereof; or

- (4) subjecting a compound of the formula :



in which  $R^1$  is as defined above, and  
 $R_b^2$  is protected carboxy(lower)-  
alkoxycarbonyl,  
or a salt thereof to removal reaction of the  
carboxy-protective group in  $R_b^2$  to give a compound  
of the formula :



in which  $R^1$  is as defined above, and  
 $R^2$  is carboxy(lower)alkoxycarbonyl,  
 or a salt thereof.

10

*a* <sup>20</sup>  
*a* <sup>21</sup>

*antimicrobial*  
 21. A pharmaceutical composition which comprises, as an *antimicrobially*  
~~effective amount of~~ ~~active ingredient,~~ a compound of claim 1 and a  
 pharmaceutically acceptable salt thereof in admixture  
 with pharmaceutically acceptable carriers.

15

*End*  
 22. A method for the treatment of infectious diseases  
 caused by pathogenic microorganisms which comprises  
 administering a compound of claim 1 and a pharmaceuti-  
 cally acceptable salt thereof to infected human being  
 or animals.

20

23. Use of a compound of claim 1 and pharmaceutically  
 acceptable salt thereof for treatment of microbial  
 infections.

25

30

35

*Add B1*